

REMARKS

Claims 1-10 are pending and under consideration. New claim 11 is added. Claims 1-11 remain for reconsideration, which is requested.

REJECTION OF CLAIMS 1-6 AND 8-10 UNDER 35 U.S.C. 103(a)

Claims 1-6 and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Monjo (US pat. No 6,490,006) in view of Arai (US Pat No. 5,258,275) and Smoot (US Pat No. 5,940,139).

Claims 1-6 and 8-10 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Monjo (US Pat-6,490,006) in view of Arai (US Pat-5,258,275) and Smoot (US Pat-5,940,139).

Monjo, newly cited, proposes a chroma key system which discriminates background and non-background based upon a color difference. Monjo fails to disclose or suggest, among other things, "a second image pickup step to pickup an image of the object positioned in front of the background using wavelengths in an infrared region" and "wherein at least a surface of the background is formed by an organic dye," as is recited in independent claim 1.

Arai, newly cited, proposes a silver halide photographic light-sensitive material having a density scarcely lowered by aging. Further, column 6, lines 50-52 of Arai describe that sensitizing dyes applicable to red or infrared light-sensitive silver halide emulsions include, typically, cyanine and the like. Arai does not disclose or suggest, among other things, "a second image pickup step to pickup an image of the object positioned in front of the background using wavelengths in an infrared region" and "wherein at least a surface of the background is formed by an organic dye," as is recited in independent claim 1.

Nothing has been found either expressly or implicitly in Arai and/or Monjo that it would be obvious to modify Arai's silver halide photographic light-sensitive material having a density scarcely lowered by aging, or Monjo's chroma key system which discriminates background and non-background based upon a color difference, and/or Smooth's discussions of using two light sources 16 and 18, which are fixed in position and what is illuminated, to form at least a surface of a background by an organic dye in order to enable said extracting to extract only an object based on images picked up by first and second image pickup steps, where the first image pickup step picks up an image of the object positioned in front of the background using wavelengths in a visible light region and the second image pickup step picks up an image of the object positioned in front of the background using wavelength in an infrared region.

In other words, Smoot requires two light sources 16 and 18 for illumination using visible light and infrared light. The light source 16 must illuminate both the object and the background, while the light source 18 must illuminate only the background. Furthermore, the light sources 16 and 18 must have a predetermined positional relationship to the object and the background. For example, if any one of the object, the background and the light sources 16 and 18 moves, it may become impossible for the light source 16 to illuminate both the object and the background and for the light source 18 to illuminate only the background. Accordingly, these features and positional relationship are essential in order for the method of Smoot to extract only the object based on the images picked up by cameras 20 and 24. In other words, Smoot cannot extract only the object based on the images picked up by the cameras 20 and 24, if the camera 20 picks up an image of the object positioned in front of the background using wavelengths in a visible light region and the camera 24 picks up an image of the object positioned in front of the background using wavelength in an infrared region, because Smoot requires two light sources 16 and 18 of different wavelengths, namely, the light source 16 to illuminate both the object and the background and requires the light source 18 to illuminate only the background.

Hence, Smoot fails to disclose or suggest, among other things, "a second image pickup step to pickup an image of the object positioned in front of the background using wavelengths in an infrared region" and "wherein at least a surface of the background is formed by an organic dye," as is recited in independent claim 1.

Furthermore, there is no motivation, either expressly or implicitly, in Monjo and/or Arai to combine Smoot to the chroma key system of Monjo. As explained above, Smoot requires two light sources 16 and 18 of different wavelengths, namely, the light source 16 to illuminate both the object and the background and requires the light source 18 to illuminate only the background. It is not seen how and why one of ordinary skilled in the art would even consider applying the system of Smoot to the chroma key system of Monjo, because it is unclear what is to be achieved by such a combination. In other words, if one combined Monjo with Smoot, in the combination Smoot would still require the light source 16 to illuminate both the object and the background and require the light source 18 to illuminate only the background, but Monjo simply changes the background color by illumination when picking up the object in front of the background using a single camera 3.

Moreover, as stated by the examiner on page 3, lines 4-7 of the Office Action mailed July 9, 2008, the organic dye provides an increase in brightness and shading which further

distinguish between the object and the background in an image (as described in paragraph 0053 of Rohr, previously cited). Hence, it is not seen how and why one of ordinary skill in the art would even consider applying Arai's "sensitizing dyes applicable to red or infrared light-sensitive silver halide emulsions" to the background of Monjo or Smoot, because it is unclear what is to be achieved by such a combination. As explained above, Monjo changes the background color by illumination when picking up the object in front of the background using a single camera 3, while Smoot requires the light source 16 to illuminate both the object and the background and requires the light source 18 to illuminate only the background.

Because according to claim 1 "at least a surface of the background is formed by an organic dye" and the method comprises "a second image pickup step to pick up an image of the object positioned in front of the background using wavelengths in an infrared region," this enables "using a computer processor **extracting only the image of the object** based on the images picked up by the first and second image pickup steps," as is recited in independent claim 1 (bold emphasis added). Such an extraction of only the image of the object using the background having at least the surface thereof formed by the organic dye, is not disclosed or suggested by the asserted combination of Monjo, Arai and Smoot.

Therefore, the asserted combination of Monjo, Arai and Smoot fails to disclose or suggest all of the features of independent claim 1, and the obviousness rejection of claims 1-4 cannot be maintained.

Independent claim 5 is directed to an authentication apparatus and recites, among other things, "a second image pickup section to pickup an image of the object positioned in front of the background using wavelengths in an infrared region" and "wherein at least a surface of the background is formed by an organic dye." Therefore, independent claim 5 is not obvious from the asserted combination of Monjo, Arai and Smoot for reasons similar to the reasons explained above with respect to the obviousness rejection of independent claim 1.

Therefore, the asserted combination of Monjo, Arai and Smoot fails to disclose or suggest all of the features of independent claim 5, and the obviousness rejection of claims 6, 8 and 9 cannot be maintained.

Independent claim 10 is directed to a method and recites, among other things, "using a background including a surface formed by an organic dye", and using a camera capturing a first image of the target object using the visible light and capturing a second image of the target object using the infrared light". Therefore, independent claim 10 is not obvious from the asserted

combination of Monjo, Arai and Smoot for reasons similar to the reasons explained above with respect to the obviousness rejection of independent claim 1.

REJECTION OF CLAIM 7 UNDER 35 U.S.C. 103(a)

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Monjo '006 in view of Arai '275 and Smoot '139 as applied to claim 1 further in view of Okazaki (US Pat. No. 6,873,713).

Claim 7 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Monjo (US Pat-6,490,006) in view of Arai (US Pat-5,258,275), Smoot (US Pat-5,940,139) and Okazaki (US Pat-6,873,713).

Claim 7 depends from independent claim 5 which is clearly delimited over the asserted combination of Monjo, Arai and Smoot.

Okazaki is merely relied upon as disclosing a matching section to compare the extracted image and registered images. Okazaki does not disclose or suggest, among other things, "a second image pickup section to pickup an image of the object positioned in front of the background using wavelengths in an infrared region" and "wherein at least a surface of the background is formed by an organic dye", as is recited in independent claim 5.

Therefore, claim 7 is not obvious from the asserted combination of Monjo, Arai, Smoot and Okazaki. Allowance of claim 7 is requested.

NEW DEPENDENT CLAIM 11

New dependent claim 11 depending from independent claim 10 provides "wherein said using of the camera further comprises using a first camera that captures the first image of the target object using the visible light and using a second camera that captures the second image of the target object using the infrared light." For example, Figs. 1 and 4 and the related description support the embodiment. In addition, dependent claim 11 inherits the patentable recitations of independent claim 10, and therefore, patentably distinguishes over Monjo, Arai and Smoot for the reasons discussed above for independent claim 1, in addition to the additional features recited therein.

CONCLUSION

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,
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